The "Crag Mollusca."

In the last number of the 'Annals' Mr. Searles V. Wood expressed his opinion that *Purpura tetragona* of his late father's Monograph on the Crag Mollusca was a variety of *Murex erinaceus*, and not of *Purpura lapillus*, in which Prof. Prestwich placed it on my authority, in his papers on the Crag beds of Norfolk and Suffolk. This question involves a difference not merely of a specific but of a generic and even family character. In *Murex* the canal is of moderate length, and is more or less covered over or closed above; in *Purpura* the canal is very short and quite open. All the specimens which I have seen of *Purpura tetragona*, including the types in the British Museum, belong (as I consider) to the latter genus, in which Mr. Wood's father properly placed it. Some Crag specimens of *Purpura lapillus* are carinated, and others are more or less cancellated, as in the variety *tetragona*. The sculpture of *Murex erinaceus* is different. I may observe that the specific or varietal name *tetragona* ought not to be accentuated like the English word "tetragonal," but that the penultimate syllable is long, as in the Latin word "tetragonus."

J. Gwyn Jeffreys.

On a new Crinoid from the Southern Sea. By P. Herbert Carpenter, M.A., Assistant Master at Eton College.

Among the collections of the late Sir Wyville Thomson a small *Comatula* has recently been discovered which was dredged by the 'Challenger' at a depth of 1800 fathoms in the Southern Sea. Although it is unusually small, the diameter of the calyx being only 2 millim., the characters presented by this form are such as to render it by far the most remarkable among all the types of recent Crinoids, whether stalked or free. The name proposed for it is *Thaumatocrinus renovatus*.

It has only five arms, and in this respect resembles *Eudiocrinus*. But the basals, instead of becoming transformed into a rosette as in that genus, persist on the exterior of the calyx, and form a closed ring of relatively large plates, which rest upon the centrodorsal. They support a ring of ten plates, five of which, alternating with the basals, bear the arms, and are therefore the radials. These radials, however, do not meet one another laterally; for they alternate with five plates slightly smaller than themselves, which rest upon the basals, and, with one exception, terminate in a free edge at the margin of the disk. The exception is the interradial of the anal side, which bears a short and tapering arm-like appendage of five or six joints. It has no special relation to the anal tube, the lower part of which, like the peripheral portion of the disk, bears a pavement of anambulacral plates. But the centre of the disk is occupied by a relatively large and substantial oral pyramid; so that the disk in its general aspect resembles that of *Hyocrinus*.

Thaumatocrinus is thus distinguished by four striking peculiarities :—

(1) The presence of a closed ring of basals upon the exterior of the calyx.

(2) The persistence of the oral plates of the larva, as in *Hyocrinus* and *Rhizocrinus*.

(3) The separation of the primary radials by interradials which rest on the basals.

(4) The presence of an arm-like appendage on the interradial plate of the anal side.

Taking these in order—

(1) No adult *Comatula*, except the recent *Atelecrinus* and some little-known fossils, has a closed ring of basals; and even in *Atelecrinus* they are quite small and insignificant.

(2) In all recent *Comatulæ*, in the Pentacrinidæ, and in *Bathycrinus*, the oral plates of the larva become resorbed as maturity is approached. In *Thaumatocrinus*, however, they are retained, as in *Hyocrinus*, *Rhizocrinus*, and *Holopus*, representatives of three different families of Neocrinoids.

(3) There is no Neocrinoid, either stalked or free, in which the primary radials remain permanently separated as they are in *Thaumatocrinus* and for a short time after their first appearance in the larva of ordinary Crinoids. The only Palæocrinoids presenting this feature are certain of the Rhodocrinidæ (as understood by Wachsmuth and Springer), e. g. *Reteocrinus*, *Rhodocrinus*, *Thylacocrinus*, &c. In the two latter, and in the other genera which have been grouped together with them into the section *Rhodocrinites* (W. and S.), there is a single interradial intervening between every two radials, and resting on a basal just as in *Thaumatocrinus*. But in the Lower Silurian *Reteocrinus* (of Billings, emend. W. and S.) the interradial areas contain a large number of minute pieces of irregular form and arrangement.

(4) It is only, however, in *Reteocrinus* and in the allied genus *Xenocrinus*, Miller, which is also of Lower Silurian age *, that an anal appendage similar to that of *Thaumatocrinus* is to be met with.

Of the four distinguishing characters of *Thaumatocrinus*, therefore, one appears in one or perhaps in two genera of *Comatulæ*; another is not to be met with in any *Comatula*, though occurring in certain stalked Crinoids; while the two remaining characters are limited to one family of the Palæocrinoids, one of them being peculiar to one, or at most two genera which are confined to the Lower Silurian rocks.

Their reappearance in such a specialized type as a recent *Comatula* is therefore all the more striking.—*Proc. Roy. Soc.* 1883, No. 225, p. 138.

* *Reteocrinus* occurs in the Trenton Limestone of Ottawa and in the Hudson-river group of Indiana and Ohio. *Xenocrinus* has as yet been found in the latter group only. I cannot help suspecting that a better knowledge of this type will lead to its absorption into *Reteocrinus*.—P. H. C.